

Title (en)

Normally white twisted nematic liquid crystal display device with retardation films on opposite sides of the liquid crystal material for improving the viewing zone and method for centering the highest contrast viewing zone

Title (de)

In Ruhestellung wei e Anzeigevorrichtung mit verdrillt nematischem Flüssigkristall und Verzögerungsschichten auf gegenüberliegenden Seiten des Flüssigkristallmaterials zur Verbesserung der Betrachtungszone und Verfahren zum Zentrieren der Betrachtungszone mit dem höchsten Kontrast

Title (fr)

Dispositif d'affichage à cristal liquide nématique en hélice, blanc dans l'état non-activé, utilisant des films retardants aux côtés opposés du matériau à cristal liquide pour améliorer la région d'observation et procédé pour mettre au centre le région d'observation ayant le plus grand contraste

Publication

**EP 0667553 B1 20050302 (EN)**

Application

**EP 94119683 A 19941213**

Priority

US 16765293 A 19931215

Abstract (en)

[origin: EP0667553A2] A normally white twisted birefringent liquid crystal display having first and second retardation films having retardation values of about 80 - 200 nm on opposite sides of a liquid crystal layer for the purpose of expanding the viewing angles of the display. Also, the viewing zone of this normally white display can be shifted vertically by rotating the optical axes of the retardation films so as to position the viewing zone away from an inversion area. <IMAGE>

IPC 1-7

**G02F 1/1335**; **G02F 1/139**

IPC 8 full level

**G02F 1/1333** (2006.01); **G02F 1/13** (2006.01); **G02F 1/133** (2006.01); **G02F 1/1335** (2006.01); **G02F 1/13363** (2006.01); **G02F 1/1337** (2006.01); **G02F 1/139** (2006.01)

CPC (source: EP US)

**G02F 1/13363** (2013.01 - EP US); **G02F 1/133634** (2013.01 - EP US); **G02F 1/133531** (2021.01 - EP US); **G02F 1/133784** (2013.01 - EP US); **G02F 1/1396** (2013.01 - EP US); **G02F 2202/40** (2013.01 - EP US); **G02F 2413/02** (2013.01 - EP US); **G02F 2413/08** (2013.01 - EP US); **G02F 2413/13** (2013.01 - EP US); **G02F 2413/14** (2013.01 - EP US)

Cited by

US6028651A; US5907378A; US6137556A; EP0871059A3; US6535258B1; US6937309B2; US7245340B2

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

**EP 0667553 A2 19950816**; **EP 0667553 A3 19960417**; **EP 0667553 B1 20050302**; AT E290232 T1 20050315; CA 2137047 A1 19950616; CA 2137047 C 20080401; DE 69434282 D1 20050407; DE 69434282 T2 20051027; JP 3851941 B2 20061129; JP H07199176 A 19950804; US 5570214 A 19961029; US 5694187 A 19971202; US 5706068 A 19980106

DOCDB simple family (application)

**EP 94119683 A 19941213**; AT 94119683 T 19941213; CA 2137047 A 19941130; DE 69434282 T 19941213; JP 33337994 A 19941215; US 16765293 A 19931215; US 71179796 A 19960910; US 78590097 A 19970121